CLAIMS

1. A method for preparing a cured product comprising aggregate and a binder system, said binder system being derived from an aqueous mixture of amorphous silica, one or more bases, and optionally additives, the method comprising

1)

a) mixing the aggregate, the one or more bases and optionally additives and water to form a first component (1A);

b) providing amorphous silica, optionally mixed with water, as a second component (1B);

c) mixing together components (1A) and (1B); and

d) allowing the mixture to cure;

or

2)

a) mixing aggregate and amorphous silica and optionally additives and water to form a first component (2A);

b) providing the one or more bases, optionally mixed with water, as a second component (2B);

c) mixing together components (2A) and (2B); and

d) allowing the mixture to cure.

2. A method according to claim 1 wherein the base is selected from an alkali metal organosiliconate, alkali or alkaline earth metal hydroxides, alkali or alkaline earth metal silicates, aluminium silicates, iron(II) and iron(III) silicates and mixtures thereof, alkali or alkaline earth metal pyrosilicates, aluminium pyrosilicates, iron(II) and iron(III) pyrosilicates and mixtures thereof, alkali or alkaline earth metal carbonates, alkali or alkaline earth metal bicarbonates, alkali or alkaline earth metal phosphates, alkali or alkaline earth metal pyrophosphates, ammonia, organic amines, and cements, and combinations thereof.

3. A method according to claim 2 wherein the alkali metal organosiliconate is selected from sodium and potassium salts of
a lower alkyl organosiliconate such as methyl siliconate, ethyl siliconate, propyl siliconate, or butyl siliconate, or of
an aryl siliconate such as phenyl siliconate.

4. A mineral product according to claim 2, wherein the alkali metal organosiliconate is potassium methyl siliconate.

5. A method according to claim 2, wherein the base is selected from alkali metal hydroxides, alkaline earth metal hydroxides and cements, preferably selected from sodium hydroxide, potassium hydroxide and calcium hydroxide.

6. A method according to any of claims 1-5 wherein the aggregate is selected from organic or inorganic fibres, and organic and inorganic particles.

7. A method according to claim 6 wherein the organic or inorganic fibres are selected from silicon-containing fibres, metal fibres, oxide fibres, carbon fibres, glass fibres including micro glass fibres, Rockwool fibres, processed mineral fibres from mineral wool, volcanic rock fibres, wollastonite fibres, montmorillonite fibres, tobermorite fibres, biotite fibres, atapulgite fibres, calcined bauxite fibres, aromatic polyamide fibres, aromatic polyester fibres, aromatic polyimide fibres, cellulose fibres, cotton fibres, flax fibres, rubber fibres and fibres of derivatives of rubber, polyolefin fibres including polyethylene and polypropylene fibres, polyacetylene fibres, polyester fibres, acrylic fibres and modified acrylic fibres, acrylonitrile fibres, elastomeric fibres, protein fibres, alginate fibres, poly(ethylene terephthalate) fibres, polyvinyl alcohol fibres, aliphatic polyamide fibres, polyvinylchloride fibres, polyurethane fibres, vinyl polymeric fibres, and viscose fibres, modified by any chemical or physical processes, and any mixtures thereof.

8. A method according to claim 6 wherein the organic or inorganic particles are selected from silica particles such as ground quarts and silica gel particles, other ground mineral particles such as heavy spar, bentonite, diatomite, dolomite, feldspar, kaolin, spherical and hollow particles, carbon particles, talc, mica, vermiculite, perlite, pumice, kiselguhr, aluminium silicate, chalk, fly ash, pulverised plant shells; as well as porosity-enhancing bodies such as mica, chalk, expanded perlite or exfoliated vermiculite; or combinations thereof.

9. A method according to any of claims 1-8 wherein the additives are selected from surfactants, organic solvents, accelerators and retardants.

10. A method according to claim 9 wherein the surfactant is selected from non-ionic, anionic, and cationic surfactants; for example anionic surfactants such as derivatives of fatty acids wherein the negative charge is provided by a free carboxyl group, a sulphonate group, or a phosphate group, and such anionic surfactants commonly used in rinse aids; non-ionic surfactants such as esters or partial esters of fatty acids with an aliphatic polyhydric alcohol such as e.g. ethylene glycol, glycerol, sorbitol, etc., and the polyoxyethylene and polyoxypropylene derivatives of these esters, and such non-ionic surfactants commonly used in rinse aids; cationic surfactants such as derivatives of fatty acids, wherein the positive charge is provided by one or more quaternary ammonium groups, and such cationic surfactants commonly used in detergents; for example fatty

acids containing from 6 to 22 carbon atoms such as caproic, octanoic, lauric, palmitic, stearic, linoleic, linolenic, olesteric, and oleic acid.

11. A material prepared by a method according to any of claims 1-10.

12. A material comprising amorphous silica, one or more bases, optionally additives, and aggregate in the form of sub-micron thin flakes or scales of a mineral, such as vermaculite, glas, or mica.

13. A cured product comprising amorphous silica, one or more alkali metal organosiliconates, and optionally additives,

14. A method for preparing a cured product comprising aggregate and a binder system, said binder system being derived from a mixture of an amorphous, inorganic material M, one or more bases, and optionally additives, in a solvent, the method comprising

1)

a) mixing the aggregate, the one or more bases and optionally additives and solvent to form a first component (1A);

b) providing amorphous, inorganic material M, optionally mixed with water, as a second component (1B);

c) mixing together components (1A) and (1B); and

d) allowing the mixture to cure;

or

2)

a) mixing aggregate and amorphous, inorganic material M and optionally additives and solvent to form a first component (2A);

b) providing the one or more bases, optionally mixed with water, as a second component (2B);

c) mixing together components (2A) and (2B); and

d) allowing the mixture to cure.

15. A method according to claim 14, wherein the material M is an oxide.

16. A method according to claim 15, wherein the material M comprises at least one element from the group of : B, Al, Ga, In, Tl, Ge, Sn, Pb, Te, P, As, Sb, Bi, S, Se, and Te.

17. A method according to any of the claims 15-16, wherein the material M comprises at least one metal element from the group of transition metals.

18. A method according to any of the claims 15-17, wherein the material M comprises at least one metal element from the group of lanthanoids.

19. A method according to any of the claims 15-18, wherein the material M comprises at least one metal element from the group of actinoids.

20. A method according to claim 14, wherein the material M is a hydroxide or an oxy hydroxide.

21. A method according to claim 20, wherein the material M comprises at least one element from the group of : B, Al, Ga, In, Tl, Ge, Sn, Pb, Te, P, As, Sb, Bi, S, Se, and Te.

22. A method according to any of the claims 20-21, wherein the material M comprises at least one metal element from the group of transition metals.

23. A method according to any of the claims 20-22, wherein the material M comprises at least one metal element from the group of lanthanoids.

24. A method according to any of the claims 20-23, wherein the material M comprises at least one metal element from the group of actinoids.

25. A method according to claim 14, wherein the material M is a nitride.

26. A method according to claim 25, wherein the material M comprises at least one element from the group of : B, Al, Ga, In, Tl, Ge, Sn, Pb, Te, P, As, Sb, Bi, S, Se, and Te.

27. A method according to any of the claims 25-26, wherein the material M comprises at least one metal element from the group of transition metals.

28. A method according to any of the claims 25-27, wherein the material M comprises at least one metal element from the group of lanthanoids.

29. A method according to any of the claims 25-28, wherein the material M comprises at least one metal element from the group of actinoids.

30. A method according to claim 14, wherein the material M is a carbide.

31. A method according to claim 30, wherein the material M comprises at least one element from the group of : B, Al, Ga, In, Tl, Ge, Sn, Pb, Te, P, As, Sb, Bi, S, Se, and Te.

32. A method according to any of the claims 30-31, wherein the material M comprises at least one metal element from the group of transition metals.

33. A method according to any of the claims 30-32, wherein the material M comprises at least one metal element from the group of lanthanoids.

34. A method according to any of the claims 30-33, wherein the material M comprises at least one metal element from the group of actinoids.

35. A method according to claim 14, wherein the material M is an amorphous mineral compound, preferably of natural origin.

36. A method according to claim 14, wherein the material M is an amorphous clay-like compound, a micro-crystalline clay-like compound or similar.

37. A material prepared by a method according to any of claims 14-36.